

DOCUMENT RESUME

ED 448 122

SP 039 634

AUTHOR Tirri, Kirsi; Nevgi, Anne
TITLE In Search of a Good Virtual Teacher.
PUB DATE 2000-09-00
NOTE 19p.; Paper presented at the Annual European Conference on Educational Research (Edinburgh, Scotland, United Kingdom, September 20-23, 2000).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Faculty; College Students; *Computer Uses in Education; Feedback; Foreign Countries; Higher Education; *Internet; Open Universities; Student Attitudes; Teacher Attitudes; *Teacher Characteristics; *Teacher Effectiveness; Teacher Student Relationship; Teaching Methods
IDENTIFIERS Finland; *Virtual Universities

ABSTRACT

This study examined the qualities of good virtual teachers, investigating what aspects of teaching and learning college teachers and students considered the most important in a Web-based learning environment. Participants were teachers and students who taught or studied at Helsinki Virtual Open University from 1995-99. Respondents completed mailed questionnaires that assessed how learning was tailored to meet students' individual needs and how well teachers provided personalized guidance and feedback to students. Teachers and students also wrote qualitative essays describing their ideas about good virtual teachers. Data analysis indicated that both teachers and students believed that the characteristics of a good virtual teacher were very much the same as the characteristics of an effective teacher in general (businesslike, clear in communication, friendly, easy to approach, and willing to look at students' individual differences). They believed that a good virtual teacher needed pedagogical wisdom, teaching experience, and subject matter knowledge. They considered computer skills important, though not among the top qualities of a virtual teacher. (Contains 18 references.) (SM)

A paper presented at the European Conference on Educational Research, Edinburgh, 20-23 September 2000.

In search of a good virtual teacher

Kirsi Tirri & Anne Nevgi

**Department of Education, University of Helsinki
Finland**

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ☐ This document has been reproduced as
received from the person or organization
originating it.
- ☐ Minor changes have been made to
improve reproduction quality.

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

K. Tirri

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

- Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy

1

Introduction

This paper discusses the qualities of a good virtual teacher. Virtual teaching is investigated within the theoretical framework of teaching-studying-learning interaction (Kansanen 1999). The qualities of a good teacher are discussed in the light of current research on effective teaching. The findings of teaching effectiveness research are summarized to form six criteria for effective teaching behavior (Tirri 1993). The empirical data includes teachers (N=28) and students (N=412) who have taught or studied at Helsinki Virtual Open University (HEVI) during the years 1995-1999. The purpose of the study was to investigate what aspects of teaching and learning teachers and students find the most important in a web-based learning environment. The data was gathered through a questionnaire and essays. In the quantitative survey, the teachers and students assessed how learning was tailored to meet the individual needs of the students and how well teachers provided personalized guidance and feedback to students. In the qualitative essays, the teachers and students described their own views on a good virtual teacher. The views of teachers and students were compared to the criteria of effective teaching. The findings from the quantitative and qualitative studies were triangulated. The profile of a good virtual teacher was synthesized combining the criteria given in these different contexts.

The teaching-studying-learning process in virtual environments

The theoretical framework for the study is built on constructivism, which is seen as a philosophy of learning based on the idea that knowledge is constructed by learners (Kirschner 1999). However, the learners are not totally independent in their actions. In addition to learners, formal education includes teachers and learning environments. In any kind of institutional context, including virtual learning environments, the learners have to study according to the aims and goals defined in the curriculum (Kansanen 1999). Furthermore, learning takes place in an interactive process that can be called the teaching-studying-learning process. (Kansanen, Tirri, Meri, Krokfors, Husu & Jyrhämä 2000). Teaching and learning in a virtual learning environment challenges teachers to consider their role in this teaching-studying-learning process. Usually the teachers' role changes into the role of facilitator and mentor. Students become active participants and more independent in their learning process. Furthermore, education becomes learner centered and self-paced and the teacher-learner hierarchy is broken down (Harasim et al. 1995, 14-15). Learning in a virtual environment provides students with multiple perspectives as they are guided to make sense of the world around them. Furthermore, students are no longer passive recipients of bodies of knowledge, but are actively involved in the knowledge-building process (Jonassen, Mayers & McAleese 1993, Bonk & Cunningham 1998). Teachers' role in moderating the learning process includes establishing guidelines

BEST COPY AVAILABLE

within which students work and encouraging them during the learning process (Harasim et al. 1995). The moderator needs to make decisions and change his/her plans according to the needs of the students. Virtual teaching requires of both teachers and students flexibility and willingness to learn new things.

In virtual learning environments, indirect interaction between a teacher and a student becomes central. Indirect interaction includes the pre-interactive and post-interactive phases that both teachers and students need in order to be prepared for the next instructional situation (Kansanen 1999). In on-line teaching-studying-learning activity, the interaction can be either direct or indirect. The participants are not in face-to-face contact with each other, but they can be in constant contact through the use of computer-mediated communication. By computer-mediated communication (CMC) we mean "*a large set of functions in which computers are used to support human communication*" (Santoro 1995, 11). The technologies for CMC are commonly computer conference (CC) systems, e-mail, mailing lists for asynchronous communication, and chat and whiteboard for synchronous communication.

Mason (1991) has identified three roles for CC instructors. These roles are: organizational, social and intellectual. Paulsen (1995) has further developed the facilitation techniques for online teachers to be used in these three roles. In the organizational role, the teacher plans timetables, procedural rules, and decision-making norms. S/he organizes the structure of the web course. In the social role, the teacher creates a friendly and social environment for learning. S/he sends welcome messages and encourages students by giving personal feedback. According to Mason, the most important role for a teacher is intellectual, in which s/he facilitates and stimulates students' learning (Mason 1991). Berge (1995) has classified four roles for the instructor in a CC environment: pedagogical, social, managerial and technical. According to Berge, one teacher does not have to adopt all these roles. A "virtual teacher" can be a team working together rather than a single person.

The qualities of a good teacher in the light of current research on effective teaching

The research on effective teaching has identified certain teacher behaviors that have been shown to produce good learning results in students. According to these studies, an effective teacher is **businesslike**. The businesslike teacher is organized, systematic, goal oriented, and prepared. Effective teaching includes advanced planning and preparation in accordance with selecting proper learning objectives, diagnosing individual needs, gathering materials and supplies, and choosing appropriate teaching strategies. According to the review on effective teaching, well-organized teachers are found to be the most effective teachers (Tirri 1993).

Effective teachers are also shown to be task oriented, spending most of their time on academic activities. Academic learning time (also known as time-on-task or active learning time) is restricted to the amount of time students are actively engaged in task-oriented activities. In the Classroom Environment Study (IEA), time-on-task was related to the students' achievement in all eight participating countries (Anderson, Ryan & Shapiro 1989).

An effective teacher is capable of creating a positive learning atmosphere by being **friendly**. A friendly teacher is warm, emphatic, outgoing, positive and personal. Friendly teachers reflect their positive attitude in their tone of communication, their gestures and interpersonal relationships. Effective teachers are shown to minimize negative feedback to their students as it consistently correlates negatively with achievement (O'Neill 1988, 176-177). Praise is positive feedback with verbal approval. Praise is shown to be more effective for particular types of students and in particular contexts. It is most effective when it is personalized, more important to girls than to boys and more important to students from low-income settings (Westbury 1988, 145).

Good teachers are shown to be **verbally interactive**. Teaching effectiveness research has revealed a positive relationship between teacher clarity and pupil achievement. Teachers who present information clearly avoid vague terms, words or phrases that are unclear or lack assurance.

Effective teachers are described by the attributes **stimulating**, imaginative, exciting, provocative, interesting, and avoiding dull routine. Stimulating teaching is usually described by the noun enthusiasm. The research indicates that enthusiasm frequently correlates with achievement among older students (Brophy & Good 1986). **Flexibility** can be defined, for example, to refer to a teacher's potential "to meet the demands of the moment" and "to move with the shifting tides" (Hamachek 1975, 246) in (O'Neill 1988, 175). Flexibility is not strongly supported by the effective teaching research, but it appears in discussions on effective teaching behavior (O'Neill 1988).

The individually oriented teacher treats each individual as a unique learner. Differentiation in assignments, materials and learning tasks is provided according to the needs of the students. The issue of differentiation in teaching is much debated in the literature, especially in the area of specialization for gifted learners (Feldhusen et al. 1989). An effective teacher is **multi-media integrative**. This kind of a teacher provides multi-sensory experiences to the students through diverse media. Variability has appeared frequently in the literature as an indicator of effective teaching behavior (Tirri 1993).

The Data Source

Our data include 28 teachers and 412 students who have taught or studied at Helsinki Virtual Open University. Helsinki Virtual Open University delivered its first courses in autumn 1997, and it was opened as a complete service and study system in January 1998. During the fall 2000, Virtual Open University provides 43 courses in 12 disciplines to 765 students. All campus services are also available online at the address <http://www.avoin.helsinki.fi>.

The majority of the teachers (60%) in our study were female; their age ranged from 23 to 61. Teaching experience varied from beginner to more than ten years of experience. However, the majority of the teachers (11) had taught two to three courses.

The majority (73%) of the students were female, as well. Nearly half of them (47%) had a university degree. The majority of the students (70%) were born in the 1950s or

1960s. The youngest student was 17 and the oldest was 65 years of age. There were no differences between males and females in age distribution. The majority of the students (83%) lived in the capital area or southern parts of Finland. Only thirteen students (3%) lived abroad.

Half of the students (58%) studied on their own computer at home and 24% of the students used computers at their work. Only 10% of the students were able to use computers both at home and at work. The minority of the students (6%) studied at institutes, libraries (1%), friends' homes and other places (2%). Half of the students (55%) had modem connections, 22% of them had fixed connections and 14% of the students reported using ISDN connections. Some students (9%) were not able to report the type of connection they used. Nearly 79% of the respondents used Explorer 4.0 or Netscape 4.0 or a more recent browser. Explorer 4.0 was the most-favored Explorer version (50%) by the students of the virtual university.

Analysis methods

We used both quantitative and qualitative methods in our study. A survey was mailed to all the teachers and all the students who had taught or studied at the Virtual University of Helsinki during the years 1995-1999. Twenty-eight teachers out of 40 returned the questionnaire. The students' answering rate was little lower: 412 out of 843 returned the questionnaire. The teachers and students were asked to assess the qualities of web-based teaching using a five-point Likert scale. The answers were analyzed with standard statistic indicators (means and standard deviations). The t-test was used to determine the possible differences between students' and teachers ratings. In addition to quantitative data, some qualitative data were gathered. The teachers and students wrote essays on their own ideas of a good virtual teacher and a good virtual student. In this paper, we analyze teachers' and students' views on a good virtual teacher by comparing their responses to the criteria of effective teaching presented in our theoretical framework. The coding categories used include six criteria for a good teacher. The criteria for a good teacher includes the following behaviors: businesslike, friendly, verbally interactive, stimulating, individually oriented and multi-media integrative. In addition to these criteria, we present teachers' and students' views on the qualities of a teacher that are related to web-teaching skills in particular.

Empirical findings

The quantitative results

The quantitative questionnaire included a section with eleven items describing different qualities for a virtual teacher and teaching in a web-based environment. Both teachers and students rated all the items very high in the questionnaire (see Table 1). An interesting observation was that the teachers considered all the mentioned qualities as being more important than did their students. Furthermore, the students differed from their teachers in the order of the most important qualities for web-based teaching. The students rated teacher's subject-matter knowledge as the most important quality for a virtual teacher. The teachers, on the other hand, rated the clear structure of the learning materials as the most important quality of virtual teaching. The

students agreed with their teachers on the importance of the clear structure of the learning materials and ranked that item as the second most important. However, we can see a statistically significant difference between the ratings of teachers and students on this item ($p < .002$). Both teachers and students ranked the web teaching skills of a teacher very high (see Table 1). The students also valued criticism in feedback more than positive or encouraging feedback. The teachers differed from their students by rating the importance of businesslike, positive and encouraging feedback higher (see Table 1). Furthermore, the teachers emphasized the emphatic quality of a teacher more than their students did ($p < .000$). These results indicate that both teachers and students value businesslike behavior of a teacher in a web-based learning environment. A good virtual teacher should know his/her subject matter well and prepare clear, well-structured learning materials for the students. The students don't consider the qualities of a friendly teacher as important as the qualities of a businesslike teacher. The teachers consider emphatic and encouraging qualities of a teacher as important characteristics for a virtual teacher, as well.

Table 1. Teachers' and students' ratings on the qualities of web-based teaching. Means and standard deviations, t-test and significance of the differences

	Teachers M (SD) N	Students M (SD) N	t-value (2-tailed significance)
V1 Fast feedback	4.5 (0.67) 23	4.2 (0.81) 341	1.5 ($p < .139$)
V2 Positive feedback	4.7 (0.57) 23	4.1 (0.83) 340	3.0 ($p < .003$)
V3 Criticism in feedback	4.4 (0.72) 23	4.5 (0.62) 338	-0.8 ($p < .407$)
V4 Businesslike feedback	4.7 (0.45) 23	4.5 (0.60) 338	1.9 ($p < .056$)
V5 Personal feedback	4.4 (1.02) 23	4.1 (0.93) 339	1.3 ($p < .203$)
V6 Encouraging feedback	4.5 (0.67) 23	4.0 (0.87) 339	2.8 ($p < .006$)
V7 Emphatic teacher	4.4 (0.78) 23	3.4 (1.13) 339	5.6 ($p < .000$)
V8 Verbally interactive teacher	4.2 (0.74) 23	4.1 (0.88) 339	0.7 ($p < .472$)
V9 Teacher's subject-matter knowledge	4.8 (0.52) 22	4.8 (0.48) 340	0.1 ($p < .905$)
V10 Web teaching skills	4.8 (0.48) 22	4.5 (0.74) 340	1.5 ($p < .138$)
V11 Clear structure of the learning materials	4.9 (0.28) 23	4.7 (0.58) 340	3.4 ($p < .002$)

The qualitative results

Teachers' views on a good virtual teacher

The majority of teachers' comments described the qualities of a good virtual teacher by emphasizing the businesslike behavior in teaching (N=24). A virtual teacher needs to be organized and plan his/her own use of time carefully. The following quote represents a typical response emphasizing the importance of organized teaching behavior: *"A virtual teacher has to know how to plan his/her own use of time"* (female, a beginner in virtual teaching). Virtual teaching requires pre-interactive planning including teachers' preparation of teaching materials. A businesslike virtual teacher is systematic and knows how to coordinate discussions in the web. Furthermore he/she keeps the students in academic tasks and provides clear structures for the curriculum used. The most important quality for a businesslike teacher, however, was his/her own subject-matter knowledge. The knowledge of the subject matter was mentioned twelve times in teachers' responses. The following quote is a typical description of the importance of subject-matter knowledge for a virtual teacher: *"The knowledge of the subject taught is very important"* (male, an experienced virtual teacher). This finding is in accord with the quantitative results where subject-matter knowledge ranked as the most important quality in students' ratings and the second most important quality in teachers' ratings (see Table 1).

The teachers emphasized the importance of friendly behavior for a teacher, as well (N=22). A good virtual teacher is friendly, positive and emphatic. He/she reaches the students by overcoming the obstacles caused by the technical equipment. Fast and personal feedback was among the teaching behavior that was coded into this category as well. The following quote is a typical response that has been coded into the friendly category: *"The teacher is warm and emphatic and creates the contact with the students regardless of the technical equipment"* (female, an experienced virtual teacher).

Clarity was mentioned four times as an indicator of a verbally interactive virtual teacher. An experienced female virtual teacher described this teaching behavior in the following way: *"The teacher needs to be good and clear in his/her writing to be able to communicate with his/her students."* Stimulating teaching behavior was seen as an asset for a virtual teacher, as well. A good virtual teacher was described as being provocative and innovative. The following quote is an example of the eight responses that were coded into this category: *"The teacher is innovative himself/herself and encourages and provokes the students"* (female, a beginner in virtual teaching).

Four teachers felt that the virtual teacher has to be individually oriented. A typical response reflected this quality in the following way: *"The teacher helps the students to learn how to learn and study by themselves and helps them to find the appropriate vocabulary and materials to express their own field of study"* (female, an experienced virtual teacher).

Eight teachers held that a good virtual teacher needs qualities that are related to web pedagogy and technical mastery of computers. A typical answer by an experienced male teacher is presented here: *"The teacher needs to have the mastery of the computer and know how it is used in web teaching."*

Students' views on a good virtual teacher

The students emphasized the qualities of a friendly teacher as the most important ones for a virtual teacher. More than half of the qualitative comments (N=155) referred to the presence of the teacher, emphatic nature of the teacher or the quality of feedback given by the teacher. The following quotes are good examples of the responses that were coded into the friendly category: *"A good virtual teacher is encouraging and gives feedback as fast as possible"* (female, 22 years old); *"A good virtual teacher knows his/her students and encourages everybody to be involved"* (male, 35 years old). According to students, active participation and effectiveness in giving feedback are very important qualities for a virtual teacher. The teacher should create a friendly atmosphere that makes it easy for the students to approach the teacher, as well.

The businesslike qualities of a virtual teacher were also greatly valued by the students. In the quantitative responses, they ranked the qualities of a businesslike teacher as being more important than friendly behavior (see Table 1). More than forty percent of students' comments (N=120) mentioned teacher planning, organization of the course and the subject-matter knowledge as the most important characteristics for a virtual teacher. The comments that emphasized the subject-matter knowledge in teachers' feedback were also coded into this category. The following examples represent typical students' views on a businesslike virtual teacher: *"The teacher knows what he/she is teaching and gives a clear structure and schedule for the learning tasks"* (female, 54 years old); *"The teacher knows the learning materials well and he/she can correct mistakes if necessary"* (male, 56 years old).

Clarity in written expression was identified as the most important factor in the verbal interaction of a virtual teacher. Forty students mentioned verbal interaction skills as important characteristics of a virtual teacher. The following quotes are good examples of students' responses classified in the category "verbally interactive": *"The teacher knows how to communicate in writing"* (female, 32 years old); *"A clear and precise way of expressing himself/herself in written text"* (male, 65 years old).

Twenty-five students acknowledged the importance of individual differences in learning. They expressed the need to be treated as a unique learner in virtual learning environments. The following quote is a good example of students' responses that have been coded into this category: *"A good virtual teacher teaches the whole group and at the same time acknowledges every student as a unique learner"* (female, 37 years old). Fifty-eight students viewed stimulating teaching behavior as an asset for a virtual teacher. A thirty-six-year old male describes a good virtual teacher in the following way: *"The teacher is creative, innovative and curious and has the courage to ask questions."*

Fourteen students mentioned web-teaching skills with technical knowledge as important qualities for a virtual teacher. The following quotes demonstrate students' answers in this category: *"The teacher has to master the technology related to a web course well enough"* (female, 34 years old); *"In addition to normal pedagogy, the teacher has to be able to help in the technical problems associated with learning"* (male, 28 years old).

Concluding remarks

According to both teachers and students, the characteristics of a good virtual teacher are very much the same as the qualities of an effective teacher in general. A female student's evaluation of a good virtual teacher summarizes the findings of our study: "*A good virtual teacher is like a good teacher in general. Businesslike, clear in communication and easy to approach.*" A good virtual teacher needs pedagogical wisdom, teaching experience and subject matter knowledge. Technical knowledge and computer skills are also important but they are not among the top qualities of a virtual teacher. Concerning our findings, we claim that good teachers have great potential to become effective teachers in a virtual environment, as well.

References

- Anderson, L., Ryan, D. & Shapiro, B. (Eds.) 1989. The IEA Classroom environment study. Pergamon Press.
- Berge, Z.L. 1995. Facilitating Computer Conferencing: Recommendations from the field. *Educational Technology* 35(1), 22-30.
- Bonk, C. & Cunningham, D. 1998. Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In Bonk, C. & King, K. (Eds) 1998. *Electronic collaborators. Learner-centered technologies for literacy, apprenticeship, and discourse*. New Jersey: Lawrence Erlbaum Associates.
- Brophy, J. & Good, T. 1986. Teacher behavior and student achievement. In M. Wittrock (Ed.) *Handbook of research on teaching* (3rd ed), 328-375. New York: Macmillan.
- Feldhusen, J., Moon, S. & Rifner, P. 1989. Educating the gifted and talented. *Educational Perspectives* 26, 48-55.
- Hamachek, D. 1975. Characteristics of good teachers and implications for teacher educators. In Moham, M. & Hull, R. (Eds.) *Teaching effectiveness: Its meaning, assessment, and improvement*, 239-251. Englewood Cliffs, NJ: Educational Technology Publications.
- Harasim, L., Hiltz, S., Teles, L. & Turoff, M. 1995. *Learning networks: a field guide to teaching and learning online*. Cambridge: the MIT Press.
- Jonassen, D. 1995. Supporting communities of learners with technology: a vision for integrating technology with learning in schools. *Educational Technology* 35 (4), 60-63.
- Jonassen, D., Mayes, T., & McAleese, R. 1993. A manifesto for a constructivist approach to uses of technology in higher education. In Duffy, T., Lowyck, J. & Jonassen, D. (Eds.) *Design environments for constructive learning*, 231-247. New York: Cambridge University Press.
- Kansanen, P. Teaching as teaching-studying-learning interaction. *Scandinavian Journal of Educational Research*, 43 (1), 81-89.
- Kansanen, P., Tirri, K., Meri, M., Krokfors, L., Husu, J. & Jyrhämä, R. 2000. Teachers' pedagogical thinking. Theoretical landscapes, practical challenges. *American University Studies XIV: Education Vol. 47*. New York: Peter Lang.
- Kirschner, P. 1999. Using integrated electronic environments for collaborative teaching/learning. EARLI Keynote speech presented at the 8th Annual Conference of

the Association for Research on Learning and Instruction (EARLI 99) held in Gothenburg, Sweden.

Mason, R. 1991. Moderating educational computer conferencing. DEOSNEWS 1(19). <http://www.ed.psu.edu/acsde/deos/deosnews/deosarchives.asp>

O'Neill, G. 1988. Teaching effectiveness: a review of the research. Canadian Journal of Education 13, 162-185.

Paulsen, M. F. 1995. Moderating Educational Computer Conferences. In Zane L. Berge & Mauri P. Collins (Eds.) Computer-mediated communication and the online classroom. Volume III: Distance Learning. Cresskill, NJ: Hampton Press.

Santoro, G. M. 1995. What is computer-mediated communication? In Zane, L., Berge & Mauri, P. Collins (Eds.) Computer-mediated communication and the online classroom. Volume One: Overview and perspectives. Cresskill, NJ: Hampton Press.

Tirri, K. 1993. Evaluating teacher effectiveness by self-assessment: a cross-cultural study. Research report 122. Department of Teacher Education. Helsinki: Yliopistopaino.

Westbury, M. 1988. The science and the art of teacher effectiveness: an examination of two research traditions. Canadian Journal of Education, 13, 138-161.

In search of a good virtual teacher

Kirsi Tirri & Anne Nevgi

**Department of Education, University of Helsinki
Finland**

Introduction

This paper discusses the qualities of a good virtual teacher. Virtual teaching is investigated within the theoretical framework of teaching-studying-learning interaction (Kansanen 1999). The qualities of a good teacher are discussed in the light of current research on effective teaching. The findings of teaching effectiveness research are summarized to form six criteria for effective teaching behavior (Tirri 1993). The empirical data includes teachers (N=28) and students (N=412) who have taught or studied at Helsinki Virtual Open University (HEVI) during the years 1995-1999. The purpose of the study was to investigate what aspects of teaching and learning teachers and students find the most important in a web-based learning environment. The data was gathered through a questionnaire and essays. In the quantitative survey, the teachers and students assessed how learning was tailored to meet the individual needs of the students and how well teachers provided personalized guidance and feedback to students. In the qualitative essays, the teachers and students described their own views on a good virtual teacher. The views of teachers and students were compared to the criteria of effective teaching. The findings from the quantitative and qualitative studies were triangulated. The profile of a good virtual teacher was synthesized combining the criteria given in these different contexts.

The teaching-studying-learning process in virtual environments

The theoretical framework for the study is built on constructivism, which is seen as a philosophy of learning based on the idea that knowledge is constructed by learners (Kirschner 1999). However, the learners are not totally independent in their actions. In addition to learners, formal education includes teachers and learning environments. In any kind of institutional context, including virtual learning environments, the learners have to study according to the aims and goals defined in the curriculum (Kansanen 1999). Furthermore, learning takes place in an interactive process that can be called the teaching-studying-learning process. (Kansanen, Tirri, Meri, Krokfors, Husu & Jyrhämä 2000). Teaching and learning in a virtual learning environment challenges teachers to consider their role in this teaching-studying-learning process. Usually the teachers' role changes into the role of facilitator and mentor. Students become active participants and more independent in their learning process. Furthermore, education becomes learner centered and self-paced and the teacher-learner hierarchy is broken down (Harasim et al. 1995, 14-15). Learning in a virtual environment provides students with multiple perspectives as they are guided to make sense of the world around them. Furthermore, students are no longer passive recipients of bodies of knowledge, but are actively involved in the knowledge-building process (Jonassen, Mayers & McAleese 1993, Bonk & Cunningham 1998). Teachers' role in moderating the learning process includes establishing guidelines

within which students work and encouraging them during the learning process (Harasim et al. 1995). The moderator needs to make decisions and change his/her plans according to the needs of the students. Virtual teaching requires of both teachers and students flexibility and willingness to learn new things.

In virtual learning environments, indirect interaction between a teacher and a student becomes central. Indirect interaction includes the pre-interactive and post-interactive phases that both teachers and students need in order to be prepared for the next instructional situation (Kansanen 1999). In on-line teaching-studying-learning activity, the interaction can be either direct or indirect. The participants are not in face-to-face contact with each other, but they can be in constant contact through the use of computer-mediated communication. By computer-mediated communication (CMC) we mean "*a large set of functions in which computers are used to support human communication*" (Santoro 1995, 11). The technologies for CMC are commonly computer conference (CC) systems, e-mail, mailing lists for asynchronous communication, and chat and whiteboard for synchronous communication.

Mason (1991) has identified three roles for CC instructors. These roles are: organizational, social and intellectual. Paulsen (1995) has further developed the facilitation techniques for online teachers to be used in these three roles. In the organizational role, the teacher plans timetables, procedural rules, and decision-making norms. S/he organizes the structure of the web course. In the social role, the teacher creates a friendly and social environment for learning. S/he sends welcome messages and encourages students by giving personal feedback. According to Mason, the most important role for a teacher is intellectual, in which s/he facilitates and stimulates students' learning (Mason 1991). Berge (1995) has classified four roles for the instructor in a CC environment: pedagogical, social, managerial and technical. According to Berge, one teacher does not have to adopt all these roles. A "virtual teacher" can be a team working together rather than a single person.

The qualities of a good teacher in the light of current research on effective teaching

The research on effective teaching has identified certain teacher behaviors that have been shown to produce good learning results in students. According to these studies, an effective teacher is **businesslike**. The businesslike teacher is organized, systematic, goal oriented, and prepared. Effective teaching includes advanced planning and preparation in accordance with selecting proper learning objectives, diagnosing individual needs, gathering materials and supplies, and choosing appropriate teaching strategies. According to the review on effective teaching, well-organized teachers are found to be the most effective teachers (Tirri 1993).

Effective teachers are also shown to be task oriented, spending most of their time on academic activities. Academic learning time (also known as time-on-task or active learning time) is restricted to the amount of time students are actively engaged in task-oriented activities. In the Classroom Environment Study (IEA), time-on-task was related to the students' achievement in all eight participating countries (Anderson, Ryan & Shapiro 1989).

An effective teacher is capable of creating a positive learning atmosphere by being **friendly**. A friendly teacher is warm, emphatic, outgoing, positive and personal. Friendly teachers reflect their positive attitude in their tone of communication, their gestures and interpersonal relationships. Effective teachers are shown to minimize negative feedback to their students as it consistently correlates negatively with achievement (O'Neill 1988, 176-177). Praise is positive feedback with verbal approval. Praise is shown to be more effective for particular types of students and in particular contexts. It is most effective when it is personalized, more important to girls than to boys and more important to students from low-income settings (Westbury 1988, 145).

Good teachers are shown to be **verbally interactive**. Teaching effectiveness research has revealed a positive relationship between teacher clarity and pupil achievement. Teachers who present information clearly avoid vague terms, words or phrases that are unclear or lack assurance.

Effective teachers are described by the attributes **stimulating**, imaginative, exciting, provocative, interesting, and avoiding dull routine. Stimulating teaching is usually described by the noun enthusiasm. The research indicates that enthusiasm frequently correlates with achievement among older students (Brophy & Good 1986). **Flexibility** can be defined, for example, to refer to a teacher's potential "to meet the demands of the moment" and "to move with the shifting tides" (Hamachek 1975, 246) in (O'Neill 1988, 175). Flexibility is not strongly supported by the effective teaching research, but it appears in discussions on effective teaching behavior (O'Neill 1988).

The individually oriented teacher treats each individual as a unique learner. Differentiation in assignments, materials and learning tasks is provided according to the needs of the students. The issue of differentiation in teaching is much debated in the literature, especially in the area of specialization for gifted learners (Feldhusen et al. 1989). An effective teacher is **multi-media integrative**. This kind of a teacher provides multi-sensory experiences to the students through diverse media. Variability has appeared frequently in the literature as an indicator of effective teaching behavior (Tirri 1993).

The Data Source

Our data include 28 teachers and 412 students who have taught or studied at Helsinki Virtual Open University. Helsinki Virtual Open University delivered its first courses in autumn 1997, and it was opened as a complete service and study system in January 1998. During the fall 2000, Virtual Open University provides 43 courses in 12 disciplines to 765 students. All campus services are also available online at the address <http://www.avoin.helsinki.fi>.

The majority of the teachers (60%) in our study were female; their age ranged from 23 to 61. Teaching experience varied from beginner to more than ten years of experience. However, the majority of the teachers (11) had taught two to three courses.

The majority (73%) of the students were female, as well. Nearly half of them (47%) had a university degree. The majority of the students (70%) were born in the 1950s or

1960s. The youngest student was 17 and the oldest was 65 years of age. There were no differences between males and females in age distribution. The majority of the students (83%) lived in the capital area or southern parts of Finland. Only thirteen students (3%) lived abroad.

Half of the students (58%) studied on their own computer at home and 24% of the students used computers at their work. Only 10% of the students were able to use computers both at home and at work. The minority of the students (6%) studied at institutes, libraries (1%), friends' homes and other places (2%). Half of the students (55%) had modem connections, 22% of them had fixed connections and 14% of the students reported using ISDN connections. Some students (9%) were not able to report the type of connection they used. Nearly 79% of the respondents used Explorer 4.0 or Netscape 4.0 or a more recent browser. Explorer 4.0 was the most-favored Explorer version (50%) by the students of the virtual university.

Analysis methods

We used both quantitative and qualitative methods in our study. A survey was mailed to all the teachers and all the students who had taught or studied at the Virtual University of Helsinki during the years 1995-1999. Twenty-eight teachers out of 40 returned the questionnaire. The students' answering rate was little lower: 412 out of 843 returned the questionnaire. The teachers and students were asked to assess the qualities of web-based teaching using a five-point Likert scale. The answers were analyzed with standard statistic indicators (means and standard deviations). The t-test was used to determine the possible differences between students' and teachers ratings. In addition to quantitative data, some qualitative data were gathered. The teachers and students wrote essays on their own ideas of a good virtual teacher and a good virtual student. In this paper, we analyze teachers' and students' views on a good virtual teacher by comparing their responses to the criteria of effective teaching presented in our theoretical framework. The coding categories used include six criteria for a good teacher. The criteria for a good teacher includes the following behaviors: businesslike, friendly, verbally interactive, stimulating, individually oriented and multi-media integrative. In addition to these criteria, we present teachers' and students' views on the qualities of a teacher that are related to web-teaching skills in particular.

Empirical findings

The quantitative results

The quantitative questionnaire included a section with eleven items describing different qualities for a virtual teacher and teaching in a web-based environment. Both teachers and students rated all the items very high in the questionnaire (see Table 1). An interesting observation was that the teachers considered all the mentioned qualities as being more important than did their students. Furthermore, the students differed from their teachers in the order of the most important qualities for web-based teaching. The students rated teacher's subject-matter knowledge as the most important quality for a virtual teacher. The teachers, on the other hand, rated the clear structure of the learning materials as the most important quality of virtual teaching. The

students agreed with their teachers on the importance of the clear structure of the learning materials and ranked that item as the second most important. However, we can see a statistically significant difference between the ratings of teachers and students on this item ($p < .002$). Both teachers and students ranked the web teaching skills of a teacher very high (see Table 1). The students also valued criticism in feedback more than positive or encouraging feedback. The teachers differed from their students by rating the importance of businesslike, positive and encouraging feedback higher (see Table 1). Furthermore, the teachers emphasized the emphatic quality of a teacher more than their students did ($p < .000$). These results indicate that both teachers and students value businesslike behavior of a teacher in a web-based learning environment. A good virtual teacher should know his/her subject matter well and prepare clear, well-structured learning materials for the students. The students don't consider the qualities of a friendly teacher as important as the qualities of a businesslike teacher. The teachers consider emphatic and encouraging qualities of a teacher as important characteristics for a virtual teacher, as well.

Table 1. Teachers' and students' ratings on the qualities of web-based teaching. Means and standard deviations, t-test and significance of the differences

	Teachers M (SD) N	Students M (SD) N	t-value (2-tailed significance)
V1 Fast feedback	4.5 (0.67) 23	4.2 (0.81) 341	1.5 ($p < .139$)
V2 Positive feedback	4.7 (0.57) 23	4.1 (0.83) 340	3.0 ($p < .003$)
V3 Criticism in feedback	4.4 (0.72) 23	4.5 (0.62) 338	-0.8 ($p < .407$)
V4 Businesslike feedback	4.7 (0.45) 23	4.5 (0.60) 338	1.9 ($p < .056$)
V5 Personal feedback	4.4 (1.02) 23	4.1 (0.93) 339	1.3 ($p < .203$)
V6 Encouraging feedback	4.5 (0.67) 23	4.0 (0.87) 339	2.8 ($p < .006$)
V7 Emphatic teacher	4.4 (0.78) 23	3.4 (1.13) 339	5.6 ($p < .000$)
V8 Verbally interactive teacher	4.2 (0.74) 23	4.1 (0.88) 339	0.7 ($p < .472$)
V9 Teacher's subject-matter knowledge	4.8 (0.52) 22	4.8 (0.48) 340	0.1 ($p < .905$)
V10 Web teaching skills	4.8 (0.48) 22	4.5 (0.74) 340	1.5 ($p < .138$)
V11 Clear structure of the learning materials	4.9 (0.28) 23	4.7 (0.58) 340	3.4 ($p < .002$)

The qualitative results

Teachers' views on a good virtual teacher

The majority of teachers' comments described the qualities of a good virtual teacher by emphasizing the businesslike behavior in teaching (N=24). A virtual teacher needs to be organized and plan his/her own use of time carefully. The following quote represents a typical response emphasizing the importance of organized teaching behavior: *"A virtual teacher has to know how to plan his/her own use of time"* (female, a beginner in virtual teaching). Virtual teaching requires pre-interactive planning including teachers' preparation of teaching materials. A businesslike virtual teacher is systematic and knows how to coordinate discussions in the web. Furthermore he/she keeps the students in academic tasks and provides clear structures for the curriculum used. The most important quality for a businesslike teacher, however, was his/her own subject-matter knowledge. The knowledge of the subject matter was mentioned twelve times in teachers' responses. The following quote is a typical description of the importance of subject-matter knowledge for a virtual teacher: *"The knowledge of the subject taught is very important"* (male, an experienced virtual teacher). This finding is in accord with the quantitative results where subject-matter knowledge ranked as the most important quality in students' ratings and the second most important quality in teachers' ratings (see Table 1).

The teachers emphasized the importance of friendly behavior for a teacher, as well (N=22). A good virtual teacher is friendly, positive and emphatic. He/she reaches the students by overcoming the obstacles caused by the technical equipment. Fast and personal feedback was among the teaching behavior that was coded into this category as well. The following quote is a typical response that has been coded into the friendly category: *"The teacher is warm and emphatic and creates the contact with the students regardless of the technical equipment"* (female, an experienced virtual teacher).

Clarity was mentioned four times as an indicator of a verbally interactive virtual teacher. An experienced female virtual teacher described this teaching behavior in the following way: *"The teacher needs to be good and clear in his/her writing to be able to communicate with his/her students."* Stimulating teaching behavior was seen as an asset for a virtual teacher, as well. A good virtual teacher was described as being provocative and innovative. The following quote is an example of the eight responses that were coded into this category: *"The teacher is innovative himself/herself and encourages and provokes the students"* (female, a beginner in virtual teaching).

Four teachers felt that the virtual teacher has to be individually oriented. A typical response reflected this quality in the following way: *"The teacher helps the students to learn how to learn and study by themselves and helps them to find the appropriate vocabulary and materials to express their own field of study"* (female, an experienced virtual teacher).

Eight teachers held that a good virtual teacher needs qualities that are related to web pedagogy and technical mastery of computers. A typical answer by an experienced male teacher is presented here: *"The teacher needs to have the mastery of the computer and know how it is used in web teaching."*

Students' views on a good virtual teacher

The students emphasized the qualities of a friendly teacher as the most important ones for a virtual teacher. More than half of the qualitative comments (N=155) referred to the presence of the teacher, emphatic nature of the teacher or the quality of feedback given by the teacher. The following quotes are good examples of the responses that were coded into the friendly category: *"A good virtual teacher is encouraging and gives feedback as fast as possible"* (female, 22 years old); *"A good virtual teacher knows his/her students and encourages everybody to be involved"* (male, 35 years old). According to students, active participation and effectiveness in giving feedback are very important qualities for a virtual teacher. The teacher should create a friendly atmosphere that makes it easy for the students to approach the teacher, as well.

The businesslike qualities of a virtual teacher were also greatly valued by the students. In the quantitative responses, they ranked the qualities of a businesslike teacher as being more important than friendly behavior (see Table 1). More than forty percent of students' comments (N=120) mentioned teacher planning, organization of the course and the subject-matter knowledge as the most important characteristics for a virtual teacher. The comments that emphasized the subject-matter knowledge in teachers' feedback were also coded into this category. The following examples represent typical students' views on a businesslike virtual teacher: *"The teacher knows what he/she is teaching and gives a clear structure and schedule for the learning tasks"* (female, 54 years old); *"The teacher knows the learning materials well and he/she can correct mistakes if necessary"* (male, 56 years old).

Clarity in written expression was identified as the most important factor in the verbal interaction of a virtual teacher. Forty students mentioned verbal interaction skills as important characteristics of a virtual teacher. The following quotes are good examples of students' responses classified in the category "verbally interactive": *"The teacher knows how to communicate in writing"* (female, 32 years old); *"A clear and precise way of expressing himself/herself in written text"* (male, 65 years old).

Twenty-five students acknowledged the importance of individual differences in learning. They expressed the need to be treated as a unique learner in virtual learning environments. The following quote is a good example of students' responses that have been coded into this category: *"A good virtual teacher teaches the whole group and at the same time acknowledges every student as a unique learner"* (female, 37 years old). Fifty-eight students viewed stimulating teaching behavior as an asset for a virtual teacher. A thirty-six-year old male describes a good virtual teacher in the following way: *"The teacher is creative, innovative and curious and has the courage to ask questions."*

Fourteen students mentioned web-teaching skills with technical knowledge as important qualities for a virtual teacher. The following quotes demonstrate students' answers in this category: *"The teacher has to master the technology related to a web course well enough"* (female, 34 years old); *"In addition to normal pedagogy, the teacher has to be able to help in the technical problems associated with learning"* (male, 28 years old).

Concluding remarks

According to both teachers and students, the characteristics of a good virtual teacher are very much the same as the qualities of an effective teacher in general. A female student's evaluation of a good virtual teacher summarizes the findings of our study: *"A good virtual teacher is like a good teacher in general. Businesslike, clear in communication and easy to approach."* A good virtual teacher needs pedagogical wisdom, teaching experience and subject matter knowledge. Technical knowledge and computer skills are also important but they are not among the top qualities of a virtual teacher. Concerning our findings, we claim that good teachers have great potential to become effective teachers in a virtual environment, as well.

References

- Anderson, L., Ryan, D. & Shapiro, B. (Eds.) 1989. The IEA Classroom environment study. Pergamon Press.
- Berge, Z.L. 1995. Facilitating Computer Conferencing: Recommendations from the field. *Educational Technology* 35(1), 22-30.
- Bonk, C. & Cunningham, D. 1998. Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In Bonk, C. & King, K. (Eds) 1998. *Electronic collaborators. Learner-centered technologies for literacy, apprenticeship, and discourse*. New Jersey: Lawrence Erlbaum Associates.
- Brophy, J. & Good, T. 1986. Teacher behavior and student achievement. In M. Wittrock (Ed.) *Handbook of research on teaching* (3rd ed), 328-375. New York: Macmillan.
- Feldhusen, J., Moon, S. & Rifner, P. 1989. Educating the gifted and talented. *Educational Perspectives* 26, 48-55.
- Hamachek, D. 1975. Characteristics of good teachers and implications for teacher educators. In Moham, M. & Hull, R. (Eds.) *Teaching effectiveness: Its meaning, assessment, and improvement*, 239-251. Englewood Cliffs, NJ: Educational Technology Publications.
- Harasim, L., Hiltz, S., Teles, L. & Turoff, M. 1995. *Learning networks: a field guide to teaching and learning online*. Cambridge: the MIT Press.
- Jonassen, D. 1995. Supporting communities of learners with technology: a vision for integrating technology with learning in schools. *Educational Technology* 35 (4), 60-63.
- Jonassen, D., Mayes, T., & McAleese, R. 1993. A manifesto for a constructivist approach to uses of technology in higher education. In Duffy, T., Lowyck, J. & Jonassen, D. (Eds.) *Design environments for constructive learning*, 231-247. New York: Cambridge University Press.
- Kansanen, P. Teaching as teaching-studying-learning interaction. *Scandinavian Journal of Educational Research*, 43 (1), 81-89.
- Kansanen, P., Tirri, K., Meri, M., Krokfors, L., Husu, J. & Jyrhämä, R. 2000. Teachers' pedagogical thinking. Theoretical landscapes, practical challenges. *American University Studies XIV: Education* Vol. 47. New York: Peter Lang.
- Kirschner, P. 1999. Using integrated electronic environments for collaborative teaching/learning. EARLI Keynote speech presented at the 8th Annual Conference of

the Association for Research on Learning and Instruction (EARLI 99) held in Gothenburg, Sweden.

Mason, R. 1991. Moderating educational computer conferencing. DEOSNEWS 1(19). <http://www.ed.psu.edu/acsde/deos/deosnews/deosarchives.asp>

O'Neill, G. 1988. Teaching effectiveness: a review of the research. *Canadian Journal of Education* 13, 162-185.

Paulsen, M. F. 1995. Moderating Educational Computer Conferences. In Zane L. Berge & Mauri P. Collins (Eds.) *Computer-mediated communication and the online classroom. Volume III: Distance Learning*. Cresskill, NJ: Hampton Press.

Santoro, G. M. 1995. What is computer-mediated communication? In Zane, L., Berge & Mauri, P. Collins (Eds.) *Computer-mediated communication and the online classroom. Volume One: Overview and perspectives*. Cresskill, NJ: Hampton Press.

Tirri, K. 1993. Evaluating teacher effectiveness by self-assessment: a cross-cultural study. Research report 122. Department of Teacher Education. Helsinki: Yliopistopaino.

Westbury, M. 1988. The science and the art of teacher effectiveness: an examination of two research traditions. *Canadian Journal of Education*, 13, 138-161.